**Lesson 1 – Amino acids. Proteins.**

**1. Amino acids**

What is amino acid?

What is the difference between alpha, beta and gamma amino acids?

What are protein and non-protein amino acids?

Fill in the table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Amino acid | Structural formula | Essential/  nonessential | Aliphatic / branched-chain / aromatic | Hydrophobic / hydrophilic | Polar/ non-polar | Uncharged /  positively charged / negatively charged |
| Glycine |  |  |  |  |  |  |
| Alanine |  |  |  |  |  |  |
| Valine |  |  |  |  |  |  |
| Leucine |  |  |  |  |  |  |
| Isoleusine |  |  |  |  |  |  |
| Cysteine |  |  |  |  |  |  |
| Methionine |  |  |  |  |  |  |
| Serine |  |  |  |  |  |  |
| Threonine |  |  |  |  |  |  |
| Proline |  |  |  |  |  |  |
| Asparagine |  |  |  |  |  |  |
| Glutamine |  |  |  |  |  |  |
| Arginine |  |  |  |  |  |  |
| Lysine |  |  |  |  |  |  |
| Aspartic acid / Aspartate |  |  |  |  |  |  |
| Glutamic acid / Glutamate |  |  |  |  |  |  |
| Phenylalanine |  |  |  |  |  |  |
| Tyrosine |  |  |  |  |  |  |
| Tryptophan |  |  |  |  |  |  |
| Histidine |  |  |  |  |  |  |

**2. Protein**

What is the protein?

What is the difference between simple and conjugated protein?

What structure do proteins have?

What determines the structure of proteins?

Fill in the table

|  |  |  |
| --- | --- | --- |
| Level of protein structure | Schematic  image | Type of bonds |
| Primary |  |  |
| Secondary |  |  |
| Tertiary |  |  |
| Quaternary |  |  |

What is denaturation? In what case will denaturation be reversible? In what case will denaturation be irreversible?

Fill in the table

|  |  |  |
| --- | --- | --- |
|  | Function of protein | Example of protein |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |